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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/842,440

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Ulrich A. Muller

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EXAMINER

MILEF, ELDA G

ART UNIT

PAPER NUMBER

3692

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/842,440	Applicant(s) MULLER, ULRICH A.	
	Examiner Elda Milef	Art Unit 3692	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19, 22 and 25-28 is/are rejected.
- 7) ☒ Claim(s) 20, 21, 23 and 24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of the Claims

1. This office action is in response to the amendments submitted by the applicants on 2/11/2008.

- Claims 1-4, 7, 8, 10, 11, 13-16, 18-20, 23 are amended.
- Claims 25-28 are new.
- Claims 1-28 are pending in the application.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/11/2008 has been entered.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4-6, 9, 16, 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 4 and 16 recite the phrase "is close to a power of ten." This phrase renders the claim indefinite. What numbers are acceptable to be considered "close" to a power of 10? No basis for this limitation could be found in the specification.

Claim 9, 22 are indefinite because the claim refers to "an illegal level of the time series data." It is unclear if this phrase is referring to the volume of time series data received from the data feed, if this phrase refers to price data or another variable.

Claims 5-6 are rejected because of their dependency to the rejected claims.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Wood, Robert A., "Market Microstructure Research Databases: History and Projections". Journal of Business & Economic Statistics. Alexandria: Apr 2000. Vol. 18, Iss. 2; pg. 140, (8 pages).

Re claim 11: Wood discloses:

testing said data for decimal error,
testing for credibility of said data by comparing nearby data in the time series, and rejecting an item of data that fails the tests for decimal error and credibility.

("Another important issue in the construction of the ISSM databases was the development of error filters. Relatively infrequent but huge errors exist in transactions data. A simple example is a series of prices at about \$40 per share with a price of \$4 in the middle...Note that the returns created on either side of the \$4 observation are immense. Although this common kind of error is easy to identify, other errors are more elusive. After many hours of studying return patterns I have developed elaborate error filters that examine both trades and quotes surrounding a suspicious price or quote change...")-see p. 4 para. 5. Wood discloses decimal error filtering and testing

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for credibility of transaction data in particular a series of prices by comparing nearby data. Wood teaches an example of identifying an error in a series of prices at about \$40 with one price in the middle of the series being \$4. The filtering taught by Wood consists of identifying a decimal error i.e. \$40.00 versus \$4.00.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1,10,11,12,15,25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dacorogna (Dacorogna, Michel M.; Muller, Ulrich A. Muller, Olivier V. Pictet, Casper G. DeVries. *The Distribution of Extremal Foreign Exchange Rate Returns in Extremely Large Data Sets*. O&A Research Group: June 28, 1995).

Re claims 1,10,11,12,15, 25-28: Dacorogna disclose a method of filtering time series data ("Data set construction and data filters") pp. 14-17; comprising the steps of:

testing said data for decimal error-see ("decimal error filter")-pp.14-15;

testing said data for scaling error-see("bid price filter") p. 14;

testing said data for domain error-see ("spread filter) pp. 15-16;

testing for credibility of said data that passes the tests for decimal error, scaling error and domain error by comparing nearby data in the time series.-see (decimal error, bid price, and spread filters, the application of weak and strong filters, tail statistics study...) pp.15-16;

wherein the time series data is a series of quotes and the quotes are tested for credibility relative to the quotes within a time window.-see p. 15 wherein Dacorogna discloses ("The resulting raw time series of price records is subsequently filtered by a real-time filter which rejects prices that are very unlikely to be trading prices. There are two variations of the real-time filter...Both share the same algorithm...The real-time algorithm is composed of two parts:1.

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bid price filter which considers a prices with index j to be valid if two conditions are met... $\Delta t_{j,j}$, is the time between the prices expressed in units of days")-see p. 15. It is old and well known in the art of mathematics that Δt represents a change in time. Therefore it is obvious that the quotes are compared to one another for validity by applying the real-time filter within a "time window", namely the time between the prices expressed in units of days.

rejecting an item of data that fails the testing for decimal error; scaling error; domain error and credibility; rejecting is made by identifying and eliminating an item of data as bad; -("The resulting raw time series of price records are subsequently filtered by a real-time filter which rejects prices that are very unlikely to be trading prices.")-see p. 15 lines 1-2. It is obvious that the real-time filter disclosed by Dacorogna will reject prices based on decimal error(decimal error filter-p. 15 line 1), scaling (bid price filter-p. 15 (1.)), domain errors (spread filter-p. 15 (2.)) and testing for credibility of data because those prices that fall outside the norm (outliers)as disclosed by Dacorogna on p. 14, para. 4 ("The exceptionally large database, in the order to ten million pieces, contains some rare but aberrant

values, like a few times the normal price, caused by technical and human errors...Therefore, data filtering is absolutely necessary and deserves a discussion in this paper.").

6. Claims 2, 3, 7-9, 13-14, 18-19, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dacorogna in view of Zusman et al. (hereinafter Zusman, U.S. Patent 5,987,432).

Re claims 2, 3,13,14: Dacorogna do not specifically disclose testing for a monotonic series of quotes; long series of repeated quotes and rejection of such quotes. Zusman however, teaches a method and system for accepting data from financial market input feeds, cleansing, enhancing, and saving the data. Zusman further teaches the testing for redundant and duplicate input feeds-col. 8 lines 12-27; col. 9 lines 29-31; col. 12 lines 25-37; col. 14; correction of errors-col. 10 lines 33-36; col. 15 lines 25-53.

Re claims 7,8, 18, 19: Dacorogna disclose testing for decimal errors as in claim 1 above, Dacorogna do not specifically discloses computing a correct quote and testing the corrected quote for validity. Zusman however teaches testing for decimal error and correcting the error in col. 4 lines 12-

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16; col. 7 lines 59-62; col. 15 lines 26-50. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Dacorogna to specifically include correcting the decimal error as taught by Zusman in order to provide rapid distribution of error-free market data.

Re claims 9, 22: In light of the 112 2nd paragraph rejection above, the Examiner is interpreting "testing for an illegal level of the time series data" as testing the data in the time series for data that is not within a predetermined threshold.

Although Dacorogna do disclose "The resulting raw time series of price records is subsequently filtered by a real-time filter which rejects prices that are very unlikely to be trading prices."-see p. 15 lines 1 and 2, Dacorogna do not specifically disclose that the testing of data for domain errors comprises testing for data that is not within a predetermined threshold. Zusman however teaches testing for data against predetermined thresholds to detect errors. -see col. 14 lines 7-24. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Dacorogna to specifically disclose a "range checking logic" as taught by Zusman in order compare certain data fields with predetermined thresholds to detect errors.

7. Claims 4, 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dacorogna in view of Wood.

Re claim 4,16: Dacorogna disclose testing for decimal error-pp.14-15; Dacorogna do not specifically disclose that the

step of testing includes if an absolute value of a difference between a new quote and a previous quote in the time series data is close to a power of ten. Wood however, teaches ("A simple example is a series of prices at about \$40 per share with a price of \$4 in the middle....Note that the returns created on either side of the \$4 observation are immense. Although this common kind of error is easy to identify, other errors are more elusive. After many hours of studying return patterns I have developed elaborate error filters that examine both trades and quotes surrounding a suspicious price or quote change...")-see p. 4 para. 5. Wood discloses decimal error filtering and testing for credibility of transaction data in particular a series of prices by comparing nearby data. Wood teaches an example of identifying an error in a series of prices at about \$40 with one price in the middle of the series being \$4. It is obvious that this filtering is in fact identifying a decimal error i.e. \$40.00 versus \$4.00. Furthermore, decimals are expressed as a power of 10. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Dacorogna to specifically include the testing of decimal error is a difference between a new quote and a previous quote being is close to a power of ten i.e. \$40.00 versus \$4.00 as taught by Wood in order to identify the decimal error to be

taken into consideration for accurate financial and statistical analysis of transaction data.

8. Claim 5, 6, 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dacorogna in view of Wood as in claim 4 above, further in view of Zusman.

Re claim 5,6,17: Dacorogna and Wood do not specifically disclose testing for decimal error comprises testing if a time interval between the new quote and previous quote is less than a predetermined time. Zusman however, teaches performing application dependent calculations for every transaction message or block of transaction messages received within a predetermined time interval.-see col. 7 lines 37-53. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Dacorogna and Wood to specifically include performing calculations on transactions messages received within a predetermined time interval in order to compare valid security prices. It is old and well known in the art of computer programming that a predetermined time interval in which to test data can be defined by the programmer (e.g., 70 minutes).

Allowable Subject Matter

9. **Claims 20-21, 23-24** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and the 35 USC § 101 rejection overcome.

Response to Arguments

10. Regarding the applicant's argument that the Dacorogna reference does not indicate how the decimal error filter detects wrong decimal digits, and absence the teaching, Dacorogna cannot anticipate the claim. The applicant is reminded that the claims 1 and 11 broadly recite "testing data for decimal error." There is no mention in the claim as to "how" this is accomplished. Furthermore, it is noted that the features upon which applicant relies (i.e., how to perform decimal error filtering) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The remaining arguments submitted by the applicants with respect to claims 1-28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Savitch, Walter. "Problem Solving With C++". Addison Wesley Longman, Inc. 1999. p. 364.-cited for its reference to programming a test for determining if time is within a predetermined time interval.

Tsay, Ruey S. "Editor's Introduction to Panel Discussion On Analysis of High-Frequency Data". Journal of Business & Economic Statistics. Alexandria: Apr. 2000, Vol. 18, Iss. 2 pg. 139.-cited for its reference to high frequency data analysis.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elda Milef whose telephone number is (571)272-8124. The examiner can normally be reached on Monday -Thursday 8:30 am to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kambiz Abdi can be reached on (571)272-6702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kambiz Abdi/
Supervisory Patent Examiner, Art Unit 3692

Elda Milef
Examiner
Art Unit 3692